CLAIMS

1. A method for use on a computing device, the method comprising:

    creating a digital negative from digital object;

    linking the digital object to the digital negative;

    responsive to a save operation associated with the digital object:

    generating a new digital object; and

    bi-directionally connecting the digital negative to the new digital object; and

    responsive to a revert operation associated with the new digital object, replacing content of the new digital object with content of the digital negative.

2. A method as recited in claim 1, wherein the digital object is a digital image, video, text document, and/or digital audio.

3. A method as recited in claim 1, wherein the content of the new digital object and the content of the digital negative is pixel data.

4. A method as recited in claim 1, wherein creating and linking are automatically performed by an image acquisition interface responsive to acquiring the digital object.

5.   A method as recited in claim 1, wherein creating and linking are automatically performed responsive to a first edit to the digital object.

6.   A method as recited in claim 1, wherein creating and linking are manually performed via user interaction with a digital negative user interface (UI) control.

7.   A method as recited in claim 1, wherein linking further comprises;

indicating in the digital object a substantially unique identifier of the digital negative; and

inserting a substantially unique identifier of the digital object into the digital negative.

8.   A method as recited in claim 1, wherein the save operation is a save-as operation, and wherein the new digital object is a copy of the digital object, and wherein direct association between the digital object and the digital negative is maintained such that any revisions to the copy can be reverted back to data of the digital negative.

9. A method as recited in claim 1, wherein the save operation is an implicit save operation associated with one or more edits to content corresponding to the digital object, wherein the new digital object comprises the one or more edits, and wherein responsive to the save operation the method further comprises:

replacing the digital object with the new digital object to create a linear versioning history with respect to the digital object; and

removing a link referencing the digital object from the digital negative.

10. A methods as recited in claim 1, wherein the method further comprises, responsive to the revert operation, replacing a first set of metadata associated with new digital object with metadata of the digital negative, and/or associating a second set of metadata of the new digital object to reversion results.

11. A method as recited in claim 1, wherein the method further comprises:

exposing a digital negative management (DNM) application programming interface (API) comprising create and revert interfaces;

wherein operations for the creating and the generating are accessed via the create interface; and

wherein the revert operation is accessed via the revert interface.

12.   A method as recited in claim 1, wherein operations for the creating, the linking, the generating, the bi-directionally connecting, and the replacing are accessed via respective interfaces exposed by a digital negative management application programming interface.

13.   A method as recited in claim 12, wherein the digital negative management application programming interface comprises a create interface for generating a digital negative, an exists interface for determining whether the digital object or any version or copy of the digital object has been assigned a corresponding digital negative, a delete interface for removing a digital negative from the computing system and for deleting any association between the digital negative and one or more associated digital objects, and a revert interface for replacing contents of a specified digital object with contents of a corresponding digital negative.

14.   A computer-readable medium comprising computer-executable instructions for:

creating a digital negative from a digital image;

linking the digital image to the digital negative;

responsive to a save operation associated with the digital image:

generating a new digital image; and

bi-directionally connecting the digital negative to the new digital image; and

responsive to a revert operation associated with the new digital image, replacing pixel content of the new digital image with pixel content of the digital negative.

15.   A computer-readable medium as recited in claim 14, wherein the computer-executable instructions for creating and linking further comprise instructions for automatically performing the creating and the linking by an image acquisition interface in response to acquiring the digital image.

16.   A computer-readable medium as recited in claim 14, wherein the computer-executable instructions for creating and linking are automatically performed responsive to a first edit to the digital image.

17. A computer-readable medium as recited in claim 14, wherein the computer-executable instructions for creating and linking are manually performed via user interaction with a digital negative user interface (UI) control.

18. A computer-readable medium as recited in claim 14, wherein the computer-executable instructions for linking further comprise instructions for;

indicating in the digital image a substantially unique identifier of the digital negative; and

inserting a substantially unique identifier of the digital image into the digital negative.

19. A computer-readable medium as recited in claim 14, wherein the save operation is a save-as operation, and wherein the new digital image is a copy of the digital image, and wherein direct association between the digital image and the digital negative is maintained.

20. A computer-readable medium as recited in claim 14, wherein the save operation is an implicit save operation associated with one or more edits to pixel content corresponding to the digital image, wherein the new digital image comprises the one or more edits, and wherein responsive to the save operation the computer-executable instructions for further comprise instructions for:

replacing the digital image with the new digital image to create a linear versioning history with respect to the digital image; and

removing a link referencing the digital image from the digital negative.

21. A computer-readable medium as recited in claim 14, wherein the computer-executable instructions further comprise instructions for:

exposing a digital negative management (DNM) application programming interface (API) comprising create and revert interfaces;

wherein operations for the creating and the generating are accessed via the create interface; and

wherein the revert operation is accessed via the revert interface.

22. A computer-readable medium as recited in claim 14, wherein the computer-executable instructions for the creating, the linking, the generating, the bi-directionally connecting, and the replacing are accessed via respective interfaces exposed by a digital negative management application programming interface.

23. A computer-readable medium as recited in claim 22, wherein the digital negative management application programming interface comprises a create interface for generating a digital negative, an exists interface for determining whether the digital image or any version or copy of the digital image has been assigned a corresponding digital negative, a delete interface for removing a digital negative from the computing system and for deleting any association between the digital negative and one or more associated digital images, and a revert interface for replacing pixel contents of a specified digital image with pixel contents of a corresponding digital negative.

24. A computing device comprising:

a processor; and

a memory coupled to the processor, the memory comprising computer-readable medium comprising computer-program instructions executable by the processor for:

creating a digital negative from a digital image;

linking the digital image to the digital negative;

responsive to a save operation associated with the digital image:

generating a new digital image; and

bi-directionally connecting the digital negative to the new digital image; and

responsive to a revert operation associated with the new digital image, replacing pixel content of the new digital image with pixel content of the digital negative.

25. A computing device as recited in claim 24, wherein the computer-program instructions for creating and linking further comprise instructions for automatically performing the creating and the linking by an image acquisition interface in response to acquiring the digital image.

26. A computing device as recited in claim 24, wherein the computer-program instructions for creating and linking are automatically performed responsive to a first edit to the digital image.

27.   A computing device as recited in claim 24, wherein the computer-program instructions for creating and linking are manually performed via user interaction with a digital negative user interface (UI) control.

28.   A computing device as recited in claim 24, wherein the computer-program instructions for linking further comprise instructions for;

indicating in the digital image a substantially unique identifier of the digital negative; and

inserting a substantially unique identifier of the digital image into the digital negative.

29.   A computing device as recited in claim 24, wherein the save operation is a save-as operation, and wherein the new digital image is a copy of the digital image, and wherein direct association between the digital image and the digital negative is maintained.

30.   A computing device as recited in claim 24, wherein the save operation is an implicit save operation associated with one or more edits to pixel content corresponding to the digital image, wherein the new digital image comprises the one or more edits, and wherein responsive to the save operation the computer-program instructions for further comprise instructions for:

replacing the digital image with the new digital image to create a linear versioning history with respect to the digital image; and

removing a link referencing the digital image from the digital negative.

31. A computing device as recited in claim 24, wherein the computer-program instructions further comprise instructions for:

exposing a digital negative management (DNM) application programming interface (API) comprising create and revert interfaces;

wherein operations for the creating and the generating are accessed via the create interface; and

wherein the revert operation is accessed via the revert interface.

32. A computing device as recited in claim 24, wherein the computer-program instructions for the creating, the linking, the generating, the bi-directionally connecting, and the replacing are accessed via respective interfaces exposed by a digital negative management application programming interface.

33. A computing device as recited in claim 32, wherein the digital negative management application programming interface comprises a create interface for generating a digital negative, an exists interface for determining whether the digital image or any version or copy of the digital image has been assigned a corresponding digital negative, a delete interface for removing a digital negative from the computing system and for deleting any association between the digital negative and one or more associated digital images, and a revert interface for replacing pixel contents of a specified digital image with pixel contents of a corresponding digital negative.

34.   A computing device comprising:

means for creating a digital negative from a digital image;

means for linking the digital image to the digital negative;

responsive to a save operation associated with the digital image:

means for generating a new digital image; and

means for bi-directionally connecting the digital negative to the new

digital image; and

responsive to a revert operation associated with the new digital image,
means for replacing pixel content of the new digital image with pixel content of
the digital negative.

35.   A computing device as recited in claim 34, wherein the means for creating
and linking further comprise means for automatically performing the creating and
the linking in response to acquiring the digital image.

36.   A computing device as recited in claim 34, wherein the means for creating
and linking are automatically responsive to detecting a first edit to the digital
image.

37.   A computing device as recited in claim 34, wherein the means for creating
and linking are performed responsive to manual user interaction.

38. A computing device as recited in claim 34, wherein the means for linking substantially uniquely link the digital image and the digital negative in a bi-directional manner.

39. A computing device as recited in claim 34, wherein the save operation is a save-as operation, and wherein the new digital image is a copy of the digital image, and wherein direct association between the digital image and the digital negative is maintained.

40. A computing device as recited in claim 34, wherein the save operation is an implicit save operation associated with one or more edits to pixel content corresponding to the digital image, wherein the new digital image comprises the one or more edits, and wherein responsive to the save operation the computing device further comprises:

means for replacing the digital image with the new digital image to create a linear versioning history with respect to the digital image; and

means for removing a link referencing the digital image from the digital negative.

41. A computing device as recited in claim 34, wherein the computing device further comprises means for allowing one or more application programs to hook into a digital image management module to activate the means for creating, the means for linking, and the means for replacing.

42.　A method for presenting a user interface, the method comprising:

presenting an interface for a user to create and manage digital negatives across single or multiple linear picture version history progressions; and

receiving, via the interface, an indication of an implicit save operation with respect to a digital image;

responsive to the indication, evaluating whether the digital image has a corresponding digital negative; and

responsive to determining that the digital image does not have a corresponding digital negative:

generating a digital negative for the digital image such that the digital negative comprises substantially same pixel content as the digital image; and

linking the digital image to the digital negative.

43. A method as recited in claim 42, wherein one or more edits to the digital image map to a new version of the digital image, the new version being associated with the implicit save operation, the digital image now being an old version, and wherein the method further comprises:

responsive to determining that the digital image does have a corresponding digital negative,:

removing a link from the corresponding digital negative to the old version of the digital negative; and

inserting a link into the digital negative, the link substantially uniquely identifying the new version of the digital image, the link at least for selective reversion of pixel content of the new version to pixel content of the digital negative.

44. A method as recited in claim 42, wherein the method further comprises combining concepts of a digital original of the digital image with versioning of the digital image to present a logical view across one or more linear version histories of the digital image coupled to the digital negative, the logical view being presented on a display device.

45.   A method as recited in claim 42, wherein the method further comprises:

receiving via the interface a save-as request from the user to create a copy of the digital image; and

responsive to the save-as request:

making a copy of the digital image; and

bi-directionally linking the copy to the digital negative such that both the digital image and the copy are linked to the digital negative to enable at least reversion of both or respective versions of both to pixel content of the digital negative.

46.   A method as recited in claim 42, wherein the method further comprises:

receiving via the interface a request to create new photo from a digital negative, the request specifying a digital image coupled to a digital negative; and

responsive to the save-as request:

generating a new digital image from pixel content of the digital negative; and

bi-directionally linking the new digital image to the digital negative such that both the digital image and the new digital image are linked to the digital negative, the bi-direction linking enabling at least reversion of both or respective versions of both to pixel content of the digital negative.

47.   A method as recited in claim 42, wherein the method further comprises:

receiving via the interface a request to make a digital image a digital negative for the digital image; and

responsive to the request:

if the digital image already has a corresponding digital negative, and if at least one different digital image is connected to the corresponding digital negative:

removing any connection between the digital image and the corresponding digital negative without deleting the corresponding digital negative; and

creating a digital negative linked to the digital image comprising pixel content of the digital image;

if the digital image already has a corresponding digital negative, and no different digital image is connected to the corresponding digital negative:

deleting the corresponding digital negative;

removing any link from the digital image to the digital negative; and

creating a digital negative linked to the digital image comprising pixel content of the digital image; and

if the digital image does not have a corresponding digital negative, creating a digital negative linked to the digital image comprising pixel content of the digital image.

48.   A method as recited in claim 42, wherein the method further comprises:

receiving via the interface a request from the user to revert pixel content associated with a particular digital image to pixel content associated with a digital negative related to the particular digital image; and

responsive to receiving the request, replacing pixel content of the digital image with pixel content of the digital negative.

49.   A method as recited in claim 48, wherein the method further comprises responsive to the request, retrieving the digital negative from an external data storage device associated with a backup engine.

50.   A method as recited in claim 42, wherein the method further comprises:

receiving, via the interface, a request from the user to create a new digital image from a first digital negative stored on a data storage device associated with a backup engine; and

responsive to receiving the request, generating the new digital image and a second digital negative from the first digital negative.

51.   A method for interfacing with a digital negative management application, the method comprising:

issuing a request to create a digital negative for a specified digital image, the request causing:

- the digital negative to be linked to the digital image; and

- the digital negative to be generated to comprise pixel content of the digital image at the time of the request to create; and

communicating a request to revert pixel contents of a version of the digital image to the pixel content of the digital negative.

52.   A method as recited in claim 51, wherein the request is issued responsive to acquiring the digital image or detecting first edits to pixel content of the digital image for the first time.

53.   A method as recited in claim 51, wherein the request for creating causes the digital negative to be backed up by a backup engine to an external data storage device, and the digital negative to be removed from system memory.

54.   A method as recited in claim 51, wherein the request for creating causes the digital negative to be stored in a backup engine staging area for backup to an external data storage device.

55.	A method as recited in claim 51, wherein the method further comprises issuing a request to determine if a digital image has a corresponding digital negative connected to the digital image.

56.	A method as recited in claim 51, wherein the method further comprises:

issuing a request to remove a link to a digital image from a digital negative;

wherein, if the digital image is an only digital image connected to the digital negative, the request causes the digital negative to be deleted; and

wherein, if the digital image is one of multiple digital images connected to the digital negative, the request causes the link to be removed from the digital negative, the digital negative not being deleted.